

CLAIMS:

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1. Polypropylene having improved long chain branching and increased melt strength characterized in that it is produced by irradiating polypropylene with an electron beam having an energy of at least 5 MeV with a radiation dose of from 5 to 100 kGray in the presence of a grafting agent.

2. A polypropylene according to claim 1 wherein the electron beam energy to be used is of at least 10 MeV.

3. A polypropylene according to claim 1 or 2 wherein the grafting agent is selected from the group consisting of bismaleimide derivatives; mono-, di-, tri-, tetra-acrylate or methacrylate compounds; organosilane compounds of the formula  $A_4-nSiR_n$  where A are identical or different acrylate or methacrylate or vinyl groups, where R are identical or different alkoxy or acetoxy groups and where n is 1, 2, 3 or 4;  $\alpha,\beta$ -unsaturated acids and their anhydride derivatives; non-conjugated dienes such as 1,5-hexadiene, norbornadiene and dicyclopentadiene; dipentene; polybutadiene and copolymers containing polybutadiene blocks; butadiene based polymers and copolymers; polyisoprene and copolymers containing polyisoprene blocks; isoprene based polymers and copolymers; polyethylene;  $C_{4-20}$   $\alpha$ -olefins either linear or branched; styrene or divinylbenzene; ethylene-propylene rubbers and ethylene-propylene-diene rubbers; di-furnane derivatives; ester derivatives of fatty acids; and vinylpolybutadiene.

4. A polypropylene according to any one of claims 1 to 3 wherein the grafting agent comprises from 0.01 to 5 wt% of the weight of the polypropylene.

5. A polypropylene according to any one of claims 1 to 4 wherein the grafting agent comprises tetravinyl silane.

6. A polypropylene according to claim 5 wherein the tetravinyl silane is in an amount of from 0.01 to 1 wt% based on the weight of the polypropylene.

7. Polypropylene having a branching index of lower than 0.7 and an improved melt strength obtained by irradiating a polypropylene with an electron beam energy of at least 5 MeV with a radiation dose of 5 to 100 kGray in the presence of a grafting agent.

8. A process to produce a polypropylene with improved long chain branching and high melt strength in accordance with anyone of the preceding claims.

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